

Testimony of
Environment and Human Health, Inc.
By
David Brown Sc.D.

S.B. No. 237 (RAISED) AN ACT PROHIBITING THE STORAGE OR DISPOSAL OF FRACKING WASTE IN CONNECTICUT.

And

H.B. No. 5308 (RAISED) AN ACT CONCERNING THE REGULATION OF FRACKING WASTE.

Senator Ed Meyer, Representative Linda Gentile, and Members of the Environment Committee, Good Afternoon:

Environment and Human Health, Inc. is ONLY in strong support of Bill 237 that would ban fracking waste from coming into Connecticut.

My Name is David R. Brown, Sc.D., I live in Westport, Connecticut. I am a Public Health Toxicologist with a long-time interest in exposures to environmental chemicals and their effects on human health.

It is necessary to be vigilant when foreign chemicals are released in forms, which could expose the public's health through drinking water and air.

Since 2012 The Southwest Pennsylvania Environmental Health Project has been working to assist people experiencing the health effects from gas extraction in Washington County Pennsylvania. Our staff meets with patients who believe their health has been, impacted by natural gas drilling. People with an array of adverse health signs and symptoms are seen.

There are plausible water and air human exposure pathways to the gas drilling waste. Waste materials stored in ponds near homes, disposed of on farms and used to pave roads get into the air of houses and drinking water. People are sick. Pets and farm animals die. A study in 2012 of over 1300 births found 25% lower birth weights with decreased APGR scores when mothers lived near active drill sites.

The air, water and soil are polluted with chemicals used for fracking shale that have been carried to the surface from several hundred feet under resident's property. In fracking, toxic chemicals are mixed with tens of thousands of gallons of water and injected into the ground under high pressures. Many of the chemicals are "trade Secrets". The toxicity and, in some cases, the actual identity of the chemicals are unknown.

When the water containing the fracking chemicals returns to the surface it has been further contaminated with other toxic chemicals and radioactive materials released from shale deposits that are 100s of thousands years old. The gas waste slurry is collected in ponds and tanks prior to disposal. The ponds leak; often the rubber sides of the ponds are torn by the hoofs of deer and

other animals attempting to escape after falling or leaping into the wastewater. Dead birds and animals are commonly found in the ponds. Waste ponds and tanks release toxic materials into the ground water and the air. As the ground water becomes polluted drinking water wells are rendered unsafe. People have to seek other sources of water.

Other processes separate chemicals the natural gas that is added to the waste mix. The sludge from the ponds, the produced water and the extracted chemicals are transported off of drill sites for disposal. While a portion of this waste is injected into old abandoned gas wells, most is not. It is transported out of Pennsylvania for treatment at various wastewater plants or waste sites. Pennsylvania forbids treatment in wastewater plants or disposal into its rivers and lakes in their state. Cases of illegal dumping are numerous.

Astonishingly the produced water and well cuttings that contain hazardous waste are not classified as hazardous waste due to an exemption granted by Congress to the Oil and Gas industry. [See EPA 'Exemption of Oil and Gas Exploration Wastes from Federal Hazardous Waste Regulations'] Congress exempted these wastes from RCRA Subtitle C hazardous waste regulations. In 1988 EPA, prior to the introduction of unconventional fracking, issued a regulatory determination stating that control of Oil and Gas Exploration and Production wastes (E&P wastes) under subtitle C of the hazardous waste act was not warranted. EPA does acknowledge that these wastes could present a hazard to human health and the environment if improperly managed.

The following quote from the EPA regulations illustrate the problem for Connecticut.

“In general, the exempt status of an E&P waste depends on how the material was used or generated as waste, not necessarily whether the material is hazardous or toxic. For example, some exempt E&P wastes might be harmful to human health and the environment, and many non-exempt wastes might not be as harmful. The following simple rule of thumb can be used to determine if an E&P waste is exempt or non-exempt from RCRA Subtitle C regulations:

- *_ Has the waste come from down-hole, i.e., was it brought to the surface during oil and gas E&P operations?*
- *_ Has the waste otherwise been generated by contact with the oil and gas production stream during the removal of produced water or other contaminants from the product?*
- If the answer to either question is yes, then the waste is likely considered exempt from RCRA Subtitle C regulations.”

The exemption is passed from the drillers to waste haulers. There is no requirement for safety testing. It essentially enters commerce. The waste can be disposed of in any non-hazardous waste site in any state including Connecticut irrespective of the health and environmental hazards.

The separation, handling, and disposal of produced water represent the single largest waste stream challenge facing the oil and gas production industry. The cost of produced water handling and disposal includes lifting large volumes of water to the surface, separating it from the petroleum product, treating it, and then injecting it into the ground

or disposing of it in surface evaporation ponds. The residue from the evaporation ponds is a threat to all states.

There are presently 8,848 either active wells or well permits for drilling for natural gas in Pennsylvania – and of that number 6,391 are drilled and active. The number increases every month.

A typical natural gas well takes between 2 to 5 million gallons of fluid to frack. Of that, 10 to 50 percent of the toxic fluid returns to the surface. The returning fluid not only contains the toxic chemicals that were in the fracking fluid — but when it returns to the surface it contains radioactive materials and salts that it picked up from deep inside the earth. The waste fluid sometimes also contains arsenic and radium and one of the most toxic forms of silica.

When 6,000 active fracked wells in Pennsylvania are multiplied by 3 million gallons of fluid with toxic chemicals in it, that's 18 billion gallons of toxic fluid. [It would be equivalent to a toxic lake 50 feet deep 300 yards wide that is 11 miles long.] Of that, let's take 30% that comes back to the surface – that is 5.4 billion gallons of toxic fluid – and now that fluid contains radioactive materials and salts. Where will all that fluid go?

[The Institute for Energy and Environmental Research](#) in Pennsylvania reports that the Marcellus shale deposits contain natural radioactivity from the elements uranium and thorium, and their radioactive decay products, notably radium-226. Researchers warn, "In theory, Marcellus shale development can release radioactivity into the environment in three ways. First, rock cuttings from drilling may be improperly disposed. Second, wastewater may be improperly treated and discharged into streams and rivers. Third, wastewater may be intentionally released into the environment - such as by spreading it on roads as deicing material. In each case, radioactivity can potentially harm plants and animals in natural ecosystems." The radioactivity found in much of the fracking waste consists of radium-226, which has a 1/2 life of 1,600 years.

Were radioactive materials produced by a nuclear reactor it would be tightly regulated by the Nuclear Regulatory Commission. However the exact same radioactive materials from shale fracking is considered Naturally Occurring Radioactive Material, (NORM) and the responsibility of the USEPA which has declared it exempt from hazardous material regulation because it comes from E&P activity.

It will be extremely important for Connecticut to completely ban fracking waste from coming into the state if we are to protect the health and the environment of the citizens who live here.

Thank you for your attention,

David Brown, Sc.D.

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